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April 5, 1952

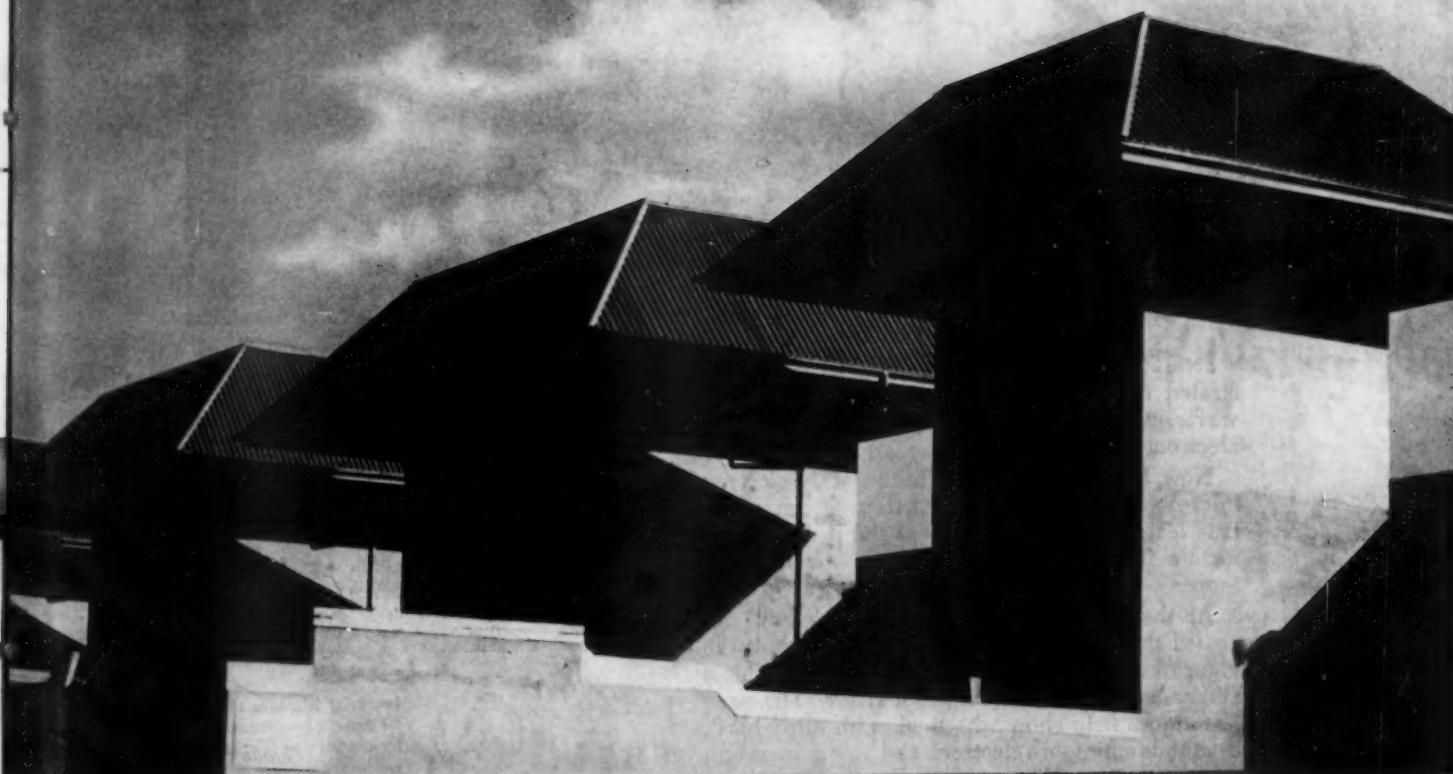
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DETROIT

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



Muffling Jet Sounds

See Page 218

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VOL. 61 NO. 14 PAGES 209-224

Electrons probe the future



IN 1927, Bell Laboratories physicists demonstrated that moving electrons behave like light waves, and thus launched the new science of electron optics.

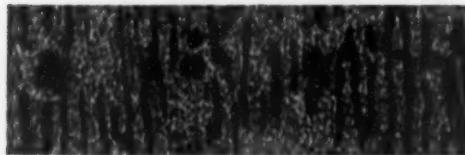
Now, through the electron beams of the electron microscope and electron diffraction camera, scientists learn crucial details about the properties of metals far beyond the reach of optical microscopes or chemical analysis.

At the Laboratories, electron beams have revealed the minute formations which produce the vigor of the permanent magnets used in telephone ringers and magnetron tubes for radar. The same techniques help show what makes an alloy hard, a cathode emit more electrons and how germanium must be processed to make good transistors.

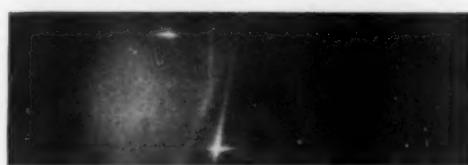
This is the kind of research which digs deep *inside* materials to discover how they can be made better for your telephone . . . and for defense.



1 Electron micrograph of an alloy of aluminum, nickel, cobalt and iron. Magnification 20,000 diameters.



2 Cooled from high temperature in a magnetic field, the alloy becomes a powerful permanent magnet. Note changed structure. Black bars reveal formation of precipitate parallel to the applied field. Each bar is a permanent magnet.



3 A Bell scientist adjusts electron diffraction camera. Electrons are projected on the specimen at glancing angles. They rebound in patterns which tell the arrangement of the atoms . . . help show how telephone materials can be improved.



4 Diffraction pattern of polished germanium reveals minute impurities which would degrade the performance of a transistor.

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Improving telephone service for America provides careers for creative men in scientific and technical fields.

MEDICINE

Successful Gland Grafts

Key to transplantation is use of glands from unborn animals or human fetuses before they have reached the fifth month so no antibodies are formed in blood.

► **SEX REJUVENATION** by transplants of sex glands may be possible after all. If this is attempted by future surgeons, it will be done by transplanting the sex glands from unborn apes, instead of from adult animals as was tried 30 years ago by the Russian physician, Serge Voronoff.

The key to success in gland transplants into humans is the use of glands from unborn animals or human fetuses at an early stage of development rather than from adults, Dr. Harry S. N. Greene of Yale University, New Haven, Conn., finds.

He has already made three such transplants. Two were of adrenal gland tissue and the third was thyroid gland tissue. One of the patients, a 35-year-old man with Addison's disease, was operated on a year ago, is now alive and working. The second patient got his adrenal gland transplant four months ago. The thyroid gland transplant was made only a few weeks ago.

Both these last two patients are still living but Dr. Greene says it is too early to tell what the results of the operation will be. In the first patient the five pieces of adrenal gland grafted into the man's abdomen

seem to be growing and producing hormones the man's own adrenal glands failed to make.

In all three cases the gland transplants were taken from human fetuses before they had reached the fifth month of life in the womb. Up to this time, Dr. Greene has discovered, tissues from fetuses do not call up antibodies in the body of an adult. After the fifth month antibodies do arise when fetal tissue is transplanted into an adult. The antibodies, similar to those the body mobilizes to fight disease germs and other foreign protein, keep the gland grafts from being successful.

The tissues from fetuses under five months are like malignant cancers in that the young fetal tissues and the cancers do not call up antibodies when transplanted into another body. Dr. Greene thinks this means there is some factor missing from the fetal tissue and the cancers. For cancer fighting, the hope is that this factor can be identified and from that knowledge better means of controlling cancer can be developed.

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PHOTO RECONNAISSANCE PLANE—The RF-84F high-speed, high or low altitude, day or night photo reconnaissance plane, carries four .50 caliber machine guns for armament. Although performance details are under security wraps, it flies very much faster than the Thunderjet.

● RADIO

Saturday, April 12, 1952, 3:15-3:30 p.m. EST
"Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. H. Jackson Davis, Director of Technical Cooperation in Uruguay for the Institute of Inter-American Affairs, U. S. Department of State, discusses "U. S. Technical Assistance in Uruguay."

TECHNOLOGY

Machines Will Make Clerks Obsolete

► **CLERKS WILL** be as obsolete in the future as galley slaves of old, Dean Louis N. Ridenour of the University of Illinois predicted to the Mutual Insurance 200th anniversary conference on the future in New York.

Electronic brains or information machines will bring about a second industrial revolution, he declared. Machines will be able to substitute for human beings in the performance of any routine occupation that can be fully specified. Except for acts of imagination and genius, machines will be able to do any mental task for the next generation better than human beings.

The only reasons that machines are not used more now are that they are costly and still somewhat primitive. For many jobs, people can still be hired for less than an adequate machine.

Dr. Ridenour warned labor unions that they are the machine's best friend since the cost of human labor is pricing people out of the labor market.

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PSYCHOLOGY

Discounting Opponent's Claims May Help Him

► A POLITICAL speaker who tries to discount what his opponent has said is using a two-edged weapon, it is indicated by an experiment reported in Atlantic City.

He may reduce the effectiveness of the opponent's arguments for the time being. But as time goes on his speech may actually serve to prevent the opponent's arguments from losing their effectiveness.

In an experiment reported by Walter Weiss of Yale University to the Eastern Psychological Association meeting, high school students were given a lesson on the effects of smoking. Later a group of the students were given a lecture intended to discount or make them skeptical of the original lesson. Opinions about smoking changed after the first lesson. After a few weeks, however, the opinion change was lessened. Those who listened to the discounting lecture had less change of opinion at first. But later on the original lesson's effectiveness had dropped less for those of the discounted group.

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METEOROLOGY

Escape Tornado Injury

► WHEN A tornado cloud appears, if you have time you should shut off the electricity and gas to your house immediately. Then you should retreat to the southwest corner of the basement if your house is frame. If you are in a building made of reinforced concrete or of steel, stand beside an inside partition on a lower floor.

✓ If you are outside, lie flat in a ditch or culvert and hold on to a fixed object so you won't blow away. Protect your head against flying objects. If you are in a city, don't jump in your car and try to get away from the tornado because high winds, often carrying debris and hail, might wreck the car and even kill the occupants.

Those words of advice come from Dr. Edward M. Brooks, tornado expert of St. Louis University, who estimated that the chance in any given year of a person's being killed by a twister is only one in 400,000. Dr. Brooks said most persons killed by tornadoes are struck in the head by flying debris or later are burned to death in fires following in the wake of the swirling air funnels.

Although tornadoes are more likely to occur in a general area extending from Louisiana and Texas up to Iowa and South Dakota, they have been recorded in unlikely spots east of the Appalachians. The tornado season is roughly from March to August and the storms occur in the more northern parts of the country as the season progresses.

Dr. H. Wexler of the U. S. Weather Bureau said meteorologists do not know exactly how tornadoes are formed. They seem to occur, though, when warm, moist air currents blowing inland from the Gulf of Mexico meet cold air masses moving eastward from the Pacific, he said.

Latest techniques in weather prediction make it possible to estimate approximately where the two air masses will meet, but

actually pinpointing the spots at which tornadoes will occur is not yet possible.

Dr. Brooks said persons should learn to recognize local tornado signs and to watch the skies when forecasts call for severe local storms.

Tornado clouds often are very dark because of their thickness. They may have a greenish or a yellowish tint. Often they appear to have great lumps hanging ominously toward the earth like large drops of water clinging to a ceiling.

Violent thunderstorms often precede tornadoes. A roaring or buzzing sound is created when the tornado funnel sweeps across the ground. The noise has been heard up to 25 miles away and for as long as one hour before the tornado struck the observer's area. The noise occurs to a lesser extent even when the funnel is aloft. It often is accompanied by long, overlapping rolls of thunder which create a continuous background rumble, Dr. Brooks added.

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PSYCHOLOGY

Plastic Eyecaps Test Color Theories

► SIXTY MEDICAL students and doctors wore plastic eyecaps which seemed to envelop them in a red, blue, green or yellow fog in an experiment to throw new light on how you see colors. The results were described to the Eastern Psychological Association meeting in Atlantic City.

The formless diffused light under the caps was given color by shining light on them through a colored filter, for a period of ten minutes. Then the light was changed to a test color.

When the eye got used to the test color, the color completely disappeared—no color

was seen. If white light or darkness were used in the pre-test, it had no effect on the time of adaptation to the test color.

By contrast, if the color of the pre-test was the same as that of the test, the color vanished immediately.

The effects of pre-test color on adaptation time to a different color failed to fit in completely with any of the accepted theories of color vision, Julien E. Hochberg, of Cornell University, and William Triebel of Grasslands Hospital, Valhalla, N. Y., told the meeting. The experiment was conducted at New York Hospital, New York.

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Question Box

ACOUSTICS

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In what way has mental illness been linked to copper in blood? p. 216.

CHEMISTRY

How is alcohol made from wood wastes? p. 213.

MARINE BIOLOGY

What is the biggest animal known? p. 219.

Photographs: Cover, General Electric Company; p. 211, Republic Aviation Corporation; p. 213, Jensen-Salsbury Laboratories, Inc.; p. 215, Roosevelt Hospital; p. 218, U. S. Air Force.

MEDICINE

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How is the size of raindrops now being measured in New Hampshire? p. 215.

PSYCHOLOGY

Can dice be willed to fall a certain way? p. 217.

VITAL STATISTICS

Why is secrecy on birth and death certificates a problem? p. 216.

CHEMISTRY

Origin of Solar System

Chemist, geologist, astronomer and physicist can reconstruct the process of earth's formation. Cheap grain alcohol can be made from wood waste.

► RECORDS OF the formation of our solar system have not been destroyed, Dr. Harrison Brown of the California Institute of Technology told the meeting of the American Chemical Society in Buffalo, when he received the Society's award in pure chemistry.

Explaining his chemical theories of the origin of our solar system, he said we have only to learn to read these records correctly. The chemist, the geologist, the astronomer and the physicist, working together, can successfully reconstruct the process.

Two groups of planets which differ dramatically in their weights and densities move around the sun. The atmospheres of these planets also differ. Carbon dioxide in the atmospheres of Venus, earth and Mars tells astronomers and chemists that carbon is highly oxidized on these inner planets.

In contrast, the sun's giant outer planets, Jupiter, Saturn, Uranus and Neptune, have methane in their atmospheres, and at least on Jupiter there is an appreciable quantity of ammonia. This means that carbon exists there in a highly reduced state. Opposite kinds of elements are believed to make up the bulk of these two kinds of planets, the heavier metals compose earth and the other dense, solid inner planets. Outer planets are so light that they must be made largely of gases with hydrogen and helium predominating.

What conditions, Dr. Brown asked in his address, would the chemist recognize as necessary to form such a series of planets, supposing our universe to start with the average composition of cosmic matter?

Three groups of elements and compounds could exist, according to Dr. Brown. Those easily condensable would contain metals, oxides and silicates, a small fraction of the whole. Such materials make up the inner planets. Elements and compounds of intermediate condensability include water, ammonia and methane. Jupiter must have been in the best position to take up the bulk of such material.

Left over are hydrogen and helium which would not condense at the temperature of space. These light elements were not so much lost from planetary atmospheres as not captured at the time of formation.

Air and water must, according to this theory, be of secondary origin, formed by reactions among the elements present after the formation of the planets similar to earth. These include not only the inner group but also Pluto, the farthest of the planets. Interpretation of the possible chemi-

cal reactions would allow scientists to read the conditions which must have been present to account for the chemical facts now evident in the solar system.

Alcohol From Wood Waste

► GRAIN ALCOHOL can be made from wood waste at less than one-half the price of production from black strap molasses, Dr. Nathan Gilbert of the Tennessee Valley Authority announced at the meeting.

In the process sawdust and chips are treated by continuous percolation with dilute sulfuric acid. This results in a material similar to molasses which can be used without concentration for cattle feed and for the production of grain alcohol.

Operating difficulties have been overcome, Dr. Gilbert said, and the new process is now in production.

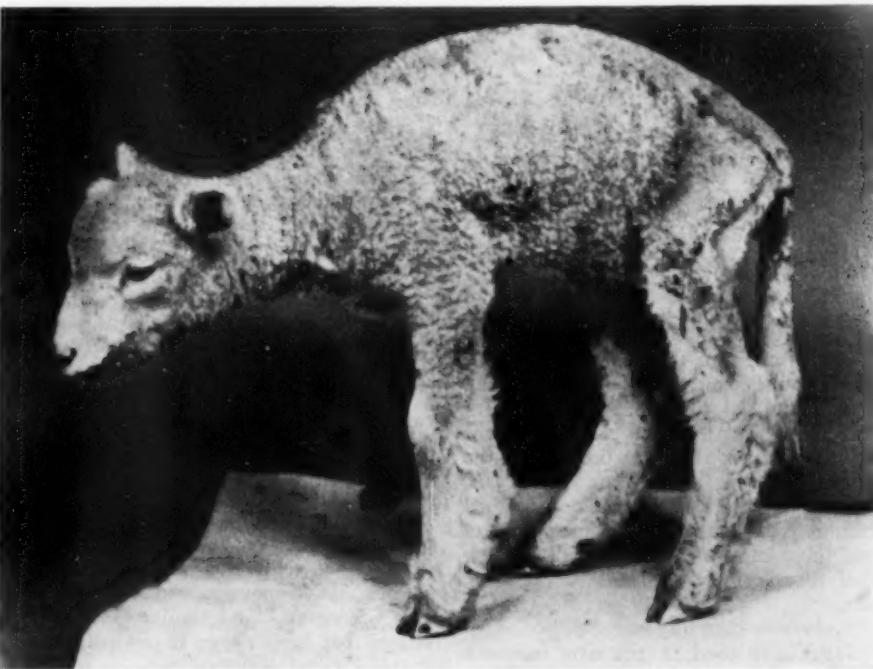
An end to danger from sweaters bursting into flame is promised in a report by

Prof. James M. Church of Columbia University, New York. New organic chemicals which contain phosphorus make fibers fireproof but avoid the trouble of losing the fireproofing material in the wash. Sweaters and other rough textured materials treated with the new fireproofing chemicals can now be worn and washed with assurance that, if a cigarette ash should set fire to the garment, the heat will transform the fireproofing compound clinging to the fibers into phosphoric acid which will efficiently smother both flames and afterglow.

Antibiotics such as penicillin are more efficient in promoting the growth of chicks than are either germicides or detergents having the same kind of effect in the chick's body.

This is found by Dr. Joel R. Stern, Joyce C. Gutierrez and Dr. James McGinnis of the State College of Washington. The scientists are investigating the belief held by some farmers that stimulation of growth by penicillin is the result of mechanical action in killing off harmful bacteria in the chicken's intestinal tract. Dr. Stern and his group reported that the effect of the antibiotic is greater than that produced by much larger quantities of chemicals not of antibiotic origin.

Plutonium, man-made atomic bomb element, builds itself into the bones when it is absorbed by the body, but does not replace the calcium of which the bone is made. The addition to knowledge about



FEWER SICK LAMBS—More lamb chops, veal and steaks may come from research by the American Veterinary Medical Association. Thousands of lambs and calves that would otherwise die this spring from "white muscle" disease may be saved by a new drug containing alpha tocopherol, most potent form of vitamin E. A sick lamb is shown here.

MEDICINE

the action of this poisonous and radioactive element was reported by Walter E. Kisielski and Austin M. Brues of Argonne National Laboratory, Chicago. Fifty-five percent of the plutonium injected is still retained by the body 265 days later, mostly in bone.

Make New Hydrocarbons

► NEW SOURCES of aviation fuel spur chemists to create hot-burning liquids economical to manufacture. R. M. Caves and R. L. McLaughlin of the Mellon Institute, Pittsburgh, and P. H. Wise of the National Advisory Committee for Aeronautics, Cleveland, reported to the meeting on their success in making a series of such compounds.

Linking together substances similar to carbolic acid and hydrocarbons derived from propane, these chemists get a satisfactory amount of new hydrocarbon compounds in a series of three diphenyl alkyl-propanes and the corresponding dicyclohexyl compounds.

Thirteen new organic compounds never before reported were described at the same meeting by George F. Lewenz of the Lewis Flight Propulsion Laboratory, National Advisory Committee for Aeronautics, Cleveland, and Kasper T. Serijan, Armour and Co., Chicago. An additional 22 new compounds of another series were prepared by this team, in a program to provide samples of known structure with which to compare chemicals to be identified in the future. The chemists described their methods of making these new additions to the aromatic series of organic compounds.

Warn of Smog Poisons

► DANGERS DUE to ordinary poisonous chemicals can now be detected by monitoring devices worn by workers exposed to them, just as atomic workers carry small instruments to detect radioactivity.

A new safety device for this purpose was described by Gordon D. Patterson, Jr., of Du Pont and Dr. Melvin G. Mellon of Purdue University, reporting their work on air pollution to the meeting.

Sulfur is the element blamed for smog and similar industrial fume problems. The indicator described by these chemicals turns yellow, green or blue according to the amount of sulfur compounds in the air. The colors appear in vanadate-silica gel which is packed into a glass tube. One of these tubes can be worn by each worker. Other tubes can be used to analyze stack gases.

An alternate detecting material, periodate-silica gel, also used in the new indicator tubes, changes from white to pink and then to red brown when there is sulfur dioxide in the air.

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More than 600 children a year, almost all under four years of age, lose their lives through accidental poisoning.

Detection of Cancer

Catching enemy when invasion is still small and localized is important part of fight against cancer. Seven danger signals listed.

(Second of a series of five articles on what can be done about cancer)

By JANE STAFFORD

► DETECTING CANCER as early as possible is an important part of the fight against the disease. You can easily see why when you understand the nature of cancer. It is abnormal growth which invades and spreads not only into surrounding parts of the body but also to distant parts.

Obviously, the chance of victory, in this case cure, is better when the enemy is small and localized in just one place. It is important to remember, also, that this abnormal growth, invasion and spread can and often does go on at a very rapid pace.

Cancer detection is very much a two-way job. The patient cannot tell by himself that he has cancer. But the doctor cannot tell until the patient comes for examination. For the patient, man or woman, there are certain symptoms or signs that should be considered danger signals. These are:

1. Any sore that does not heal.
2. A lump or thickening in the breast or elsewhere.
3. Unusual bleeding or discharge.
4. Any change in a wart or mole.
5. Persistent indigestion or difficulty in swallowing.
6. Persistent hoarseness or cough.
7. Any change in normal bowel habits.

These signs do not mean that a person necessarily has cancer. But the person who has any one of them should see a doctor to find out what is wrong, whether cancer or some other condition, and have it corrected.

These seven danger signals, as they are called, are the most frequent first expression of the commonest kinds of cancer.

Many persons have been told that early cancer is painless, that they should not wait for pain to drive them to a doctor. The last half of this is true. The first half is not necessarily so. Even a very small cancer, if located close to certain nerve endings, may cause pain or at least some kind of sensation of something not quite right or comfortable. "Heaviness," "pricking," "tightness," "soreness," and similar kinds of sensations may be felt even if real pain is not. If this kind of sensation goes on for more than a few weeks and if it is localized enough so that a person can, literally, put a finger on the place, then it should be investigated carefully by the doctor.

Being alert to these various signs and sensations that may mean cancer are the lay person's part of the cancer-detecting job.

The doctor's part of the job starts with a careful history of how the patient feels, all his symptoms and the ailments he and his parents have had. Then comes examination and if the suspected cancer is inside the body where the doctor cannot see or feel it, X-ray examinations may be made.

If cancer is still suspected, the doctor will probably want to clinch the diagnosis by a biopsy examination. This means examination under the microscope of material from the suspected cancer. This may be done by cutting out a piece from the edge of the growth, including a piece of normal tissue for comparison. Cutting out the piece of tissue is done painlessly with the aid of an anesthetic. The shape and arrangement of the cells, their organization and nucleus tell the expert who looks at them under the microscope whether or not they are from cancer.

In recent years a new microscopic test for diagnosing cancer has been developed. It is known as the smear test, the Papa or Pap test and the Papanicolaou test, because a scientist named Papanicolaou developed it. This test is based on the fact that cancers shed cells as trees shed leaves. These cells get into the body fluids of certain organs. Isolated lung cancer cells can be detected in the sputum and cells of cancer that has attacked the uterus can be detected in material smeared on a slide that is gently swept over tissues at the opening from the uterus. Cancer cells also have been found in stomach juice from patients with stomach cancer.

Since in this test the scientist must make his diagnosis on the basis of only a few cells, great skill and experience are required. A method that uses electronics to speed examination of material in this test has recently been developed and should make the test more widely available.

Because cancer often develops silently with very few symptoms in its early stages, many patients still are lost who could be saved by earlier diagnosis and treatment. In these cases it is not always the patient's delay or the doctor's that brings treatment too late. To help prevent this tragic loss of life, men and women who reach the age of 40 and 35 respectively are urged by many cancer authorities to have yearly or twice-yearly examinations by their doctors. The hope is that these men and women, who have reached the age when cancer most often attacks, will have their cancers detected in early, symptomless stages.

A cancer detection test that could be given as easily as the sugar test for diabetes



CONVERGING BEAM THERAPY—This artist's conception shows how the unique 50-gram radium treatment would work. The beams from 25 two-gram capsules converge on the patient's right kidney. The radium is so placed that the whole radiation amount is focused on the tumor site.

is greatly wanted. Many blood tests for this purpose have been developed. So far none has stood up as practical for mass screening of large numbers of people, the way chest X-ray pictures can be used to detect unsuspected tuberculosis by mass screening. But these chest X-ray screenings, started as part of the fight against tuberculosis, are actually helping to find unsuspected cancer, too. Of course in these cases it is cancer of the lung that is detected.

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Next Week: New Recruits Aid Old Guard to Halt Cancer.

METEOROLOGY

Find Raindrop Size On Mt. Washington Peak

► A DIFFERENT kind of poll is being taken in New Hampshire, this one with the help of a lady's nylon stocking, some oil and confectioners' sugar.

Meteorologists stationed atop Mount Washington, Gorham, N. H., are using this bizarre equipment to measure the size of raindrops. It is important to know raindrop and snowflake sizes to evaluate theoretically the strength of the echoes from radar returned by sheets of rain or snow.

The stockings are slightly oiled and then dusted with confectioners' sugar. When raindrops fall on this screen they cut neat holes in the oil-sugar mixture which consistently are 20% to 25% larger than the diameters of the raindrops making them.

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MEDICINE

Cancer Pain Attacked

► PAIN, GREAT fear of cancer victims, is being attacked along with efforts to find remedies for the various kinds of cancer.

Dr. Stanley Cobb, neuropathologist at the Massachusetts General Hospital, Boston, recently discussed the psychological aspects of cancer and what having cancer does to a patient's mental and emotional outlook.

Fear of pain from cancer sometimes even delays early diagnosis of the dread disease.

The medical profession now has a battery of methods for combating pain in the cancer victim. Drugs, nerve and brain operations, alcohol injections, hypnosis and psychology are used.

Newest drug is Dromoran, more powerful and longer acting than morphine. It is almost a synthetic morphine. It can cause drug addiction, like morphine, and therefore is kept under control of the Federal narcotics act.

Another synthetic drug, hailed as the best of all back in 1948, is methadon. One advantage it has over the opiates is that it does not produce a false sense of well-being, or euphoria.

A wash of radioactive gold produces relief in certain kinds of cancer. When cancer spreads to the sac encasing the lungs, the sac becomes pimpled with many little new cancers. Enormous amounts of fluid form as a result. A wash of radioactive gold sloshing around between the lungs

MEDICINE

Beams From 50 Grams of Radium Converge on Cancer

► A UNIQUE 50-gram radium treatment unit for cancer patients, one of two in the entire world, is going into operation at Roosevelt Hospital in New York.

The unit works on a new principle called converging-beam radium therapy. The 50 grams of radium are divided into 25 two-gram capsules of radium in the form of an insoluble sulfate salt. The 25 beams converge to give the patient increased effective radiation in deep-seated cancers with a minimum of skin damage as the gamma rays of the radium pass through the patient's body.

The structure for the unit was designed by Dr. Gioacchino Failla, physicist of Columbia University College of Physicians and Surgeons. Dr. Douglas Quick is director of the Roosevelt Hospital's new underground Henry Harrington Janeway Clinic where patients will be treated with the new unit.

The world's only other 50-gram radium unit is in the Institute of Cancer in Louvain, Belgium. The radium for the American unit has been loaned to Roosevelt Hospital by the Union Miniere du Haut Katanga of Brussels.

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and the sac kills many of these little cancers, thus reducing the amounts of fluid.

Metapon is still another of the pain-relieving drugs. Like morphine, patients develop a tolerance to it, so it must be used judiciously.

When fear is eliminated, the pain is less. Methods used to teach mothers not to fear childbirth are being tried on cancer patients with some success.

The operation known as lobotomy, where the surgeon cuts the nerve connections with the front part of the brain, sometimes relieves the patient of worries about his pain. He still feels the pain, but it doesn't bother him any more.

Injecting alcohol into the nerves which carry the pain sensations from the cancer areas to the brain has helped in some cases. Also cutting the same nerves has been tried.

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INVENTION

Combine Pajama and Crib Sheet for Child

► A CHILD'S pajama and crib sheet have been combined into one unit. The inventor is Bessie Jane Auer, Ossining, N. Y., and she received patent number 2,589,596. An object of the invention is to provide complete covering at all times, regardless of the position the child assumes.

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MEDICINE

Prostate Cancer May Be Twice As Prevalent

► CANCER OF the prostate gland may be much more common and strike men much earlier than was previously believed to be the case.

Dr. Perry Hudson, assistant professor of urology at Columbia University's College of Physicians and Surgeons in New York, made a survey of 104 inmates of a New York flophouse who had no symptoms of cancer obvious enough to take them to a doctor.

He found that 30% of these men, all over 45, had cancer of the prostate. He also discovered that the disease began in these men at ages ranging 10 years sooner than had previously been believed.

Before this survey it was generally believed that only 15% of men over 50 had prostate gland cancer.

Dr. Hudson said, however, that before these figures should be applied to the whole population, he would continue his investigation for a total of 1,000 cases.

The test for prostate cancer was made by taking a small sample of tissue from the part of the gland where 85% of the cancers occur. This was examined under the microscope. Dr. Hudson also discovered that two-thirds of these cases were tumors which had not spread beyond the prostate and thus were still in a position to be cured by surgery.

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PSYCHOLOGY

Upbringing Affects Success in Marriage

► A LITTLE girl dressing and undressing her doll or fondling her woolly dog is preparing herself for future motherhood if experiments conducted with rats apply also to humans.

Experiments indicating that the so called "maternal instinct" is not all inborn were performed by Dr. Bernard F. Riess, of the American Museum of Natural History and Hunter College, New York City, and were reported to a meeting of the Eastern Psychological Association in Atlantic City.

White female rats were brought up from the time they were weaned to maturity in cages from which everything they could play with or manipulate had been systematically removed. They were not even permitted to touch food pellets, nesting material or other animals.

When the animals became adult and had young, they did not nurse a single pup. Nest building was almost completely absent and other types of normal maternal behavior were greatly reduced. Maternal behavior cannot be considered entirely instinctive or due to changes in body chemistry, Dr. Riess concludes. The manner of upbringing has a lot to do with it, his study shows.

The way the male is brought up also determines whether he will make a good mate or will remain an "old bachelor," the meeting learned from Dr. Frank A. Beach and J. Kagan of Yale University.

When young white rats were allowed to mingle with female rats of the same age at a time when immaturity made complete mating impossible, the habit of treating the female only as a companion persisted in adulthood. These males were less likely to mate as adults.

Science News Letter, April 5, 1952

INVENTION

Gas Turbine Motor Drives Plane Propeller

► TWO OR more gas turbines may be used to drive a single propeller, according to a new invention by Frank M. Owner, Stanley W. Mansell and Francis C. I. Marchant, Bristol, England. The patent is numbered 2,589,853, and was assigned to the Bristol Aeroplane Company, Ltd.

Science News Letter, April 5, 1952

PSYCHOLOGY

Value of Mental Tests In Spotting Mentally Ill

► WHETHER MENTAL tests can serve to spot those individuals suffering from mental disorders was contested at the meeting of the Eastern Psychological Association in Atlantic City.

Success of the tests at Hillside Hospital, Glen Oaks, N. Y., was reported by Dr. Milton S. Gurvitz. He studied 100 successive cases diagnosed as schizophrenics solely on the basis of psychological tests. Fifty of these were tested by the person who made the diagnosis, but the other 50 were tested by internes and were not even seen by the diagnostician. In 96 of the 100 cases, the clinical diagnosis by the physician was found to agree with that made by the tests although there was some disagreement about the type of schizophrenia in ten of these cases.

The psychotic person cannot always be distinguished from the normal individual on the basis of even an elaborate battery of mental tests, was the conclusion of two other psychologists.

They compared the test results of two individuals both above average in intelligence and both alike in age, sex and veteran status, but one normal, making good social and personal adjustment, and the other hospitalized as a schizophrenic.

The test scores were studied by two clinicians who had never seen the persons studied and also a seminar of 12 clinicians skilled with the tests. They were unable to say which person should be in the hospital, Dr. Roy M. Hamlin and Richard L. Newton of Western Psychiatric Institute and Clinic, Pittsburgh, Pa., told the meeting.

Science News Letter, April 5, 1952

IN SCIENCE

BIOCHEMISTRY

Mental Illness Linked To Copper in Blood

► A NEW approach to some mental diseases seemed indicated by findings of a man who is able to measure the minute amounts of metals and other elements found in the human body.

In a study of 40 cases of manic depressive and schizophrenic patients, Dr. Bert L. Vallee of the Massachusetts Institute of Technology, Cambridge, Mass., found almost double the amount of copper in the blood of most of the mentally ill patients.

Dr. Vallee urged caution in reporting his findings. They indicate, he pointed out, that mental illness has a basis in changes in man's physical system. Most psychiatrists, he contended, believe that mental illness is not a physiological process.

There is, normally or otherwise, Dr. Vallee said, only a minute amount of copper in a person's body.

Dr. Vallee also discovered that in persons who have leukemia, sometimes called cancer of the blood, the white blood cells contain only about ten percent of the normal amount of zinc.

Science News Letter, April 5, 1952

VITAL STATISTICS

Secrecy on Birth and Death Certificates Health Problem

► THE CASE for and against disclosing information on birth and death certificates was discussed recently by health officers, newspapermen, lawyers and social workers.

Arguments against disclosing such information are: Embarrassment, if not damage, in the case of illegitimate birth or adoption; the danger of false information being filed to avoid such embarrassment.

This last danger is important from the standpoint of health protection of the entire population. Statistics on the number of deaths from various diseases and on complications at birth must be accurate so that medical and public health scientists will know the strength of the disease enemies they are fighting.

But full information may be needed for just settlement of insurance claims and acceptance of certificates as evidence of citizenship. The citizen needing information from his birth record, moreover, should be able to get it with a minimum of delay and red tape, it was pointed out at the forum held under the auspices of the American Association of Registration Executives in Washington.

Science News Letter, April 5, 1952

SCIENCE FIELDS

PSYCHOLOGY

Phone Delivers Messages Faster Than Operator Relays

► THE EFFICIENCY of the telephone, radio and other modern communication systems far exceeds that of the human operator.

Figures showing how the operator acts as a bottleneck to hold up the flow of information were presented to the meeting of the Eastern Psychological Association in Atlantic City by Dr. J. C. R. Licklider of the Massachusetts Institute of Technology.

Even a poor telephone circuit can transmit about 20,000 bits per second, a "bit" being the mathematical unit of information. The human mind cannot begin to take in and relay all of this information, Dr. Licklider told the meeting.

He tested college students and graduates on the speed with which they could relay information of various kinds—digits, letters, nonsense syllables, patterns of dots and spoken and written messages. They passed the information on verbally or by pointing.

The highest rate was less than 40 bits per second for all the different kinds of material received.

"It appears safe to conclude," Dr. Licklider said, "that, except possibly in the cases of eidetic imagery and absolute pitch, the human channel-capacity is less than 100 bits per second."

The capacity of a television channel is higher than 10,000,000 bits per second.

"As an information relay, the human operator is indeed a bottleneck," Dr. Licklider concluded.

Science News Letter, April 5, 1952

ORNITHOLOGY

Need Experience in Seeing For Visual Discrimination

► IN ORDER to tell a circle from a triangle, you have to first learn how to see.

This is demonstrated by an experiment in which ring doves spent their first weeks with their heads inside a plastic hood. The head covering admitted diffused light but prevented the birds from perceiving the form of any object.

The hood was put on the birds before they opened their eyes (at three or four days old). When they were ten weeks old a hole was cut in the hood so that the birds could see with one or with both eyes.

Then the birds were trained to distinguish a circle from a triangle and jump to one form and not the other.

It took the birds brought up in a hood "significantly" longer to learn this trick

than it did pigeons reared in a normal manner. The covering produced a slight cloudiness in the fluid of the birds' eyes and reduced their visual acuity a little but these effects were not significant and did not cause the slower learning, according to Arthur I. Siegel, of the American Museum of Natural History and Queens College, who reported the experiment to the Eastern Psychological Association meeting in Atlantic City.

Science News Letter, April 5, 1952

CHEMISTRY

Check Stocks of Explosive Chemicals

► COLLEGE, HIGH SCHOOL and industrial laboratories will be checking their stocks of potassium and sodium chlorate, potentially explosive chemicals, as the result of an explosion of 400 pounds of chlorate at Howard University, Washington, D. C., that killed four janitors moving it after at least 16 years in storage.

Science News Letter, April 5, 1952

PSYCHOLOGY

Camera Shows You Can't Will Dice to Fall Your Way

► WHETHER OR not a person can "will" sixes to turn up on throws of dice depends on who tallies the throws.

The influence of the individual scorer's beliefs on the results of this much publicized experiment in ESP (Extra-Sensory Perception) was reported by Drs. R. S. Kaufman and F. D. Sheffield, of Yale University, to the Eastern Psychological Association meeting in Atlantic City.

The claim that the mind has power over dice was tested by a group of Yale students, part of whom believed in ESP while the rest were disbelievers.

The dice were thrown by a mechanical device which throws 96 dice at a time, the number reported to be most satisfactory by Prof. J. B. Rhine, Duke University "father" of ESP.

The ESP followers and the disbelievers made independent counts of the way the dice fell. The count of each person supported his own beliefs—the believers obtained evidence of ESP influence over the dice, the disbelievers found significant evidence in the opposite direction.

Meantime the Yale investigators had a hidden camera and photographed each throw of the dice. The camera findings showed that both were wrong; there was no evidence that anyone can will the dice to land in a particular way. Neither will the attempt to do so cause them to land in any other way.

"The results of previous ESP experiments cannot be trusted if the method of observation does not involve a permanent record made by a machine," they conclude.

Science News Letter, April 5, 1952

MEDICINE

12-Million-Volt X-rays To Treat Cancer Patients

► A 12,000,000-VOLT electrostatic generator, three times more powerful than any other in operation, has been completed at the Massachusetts Institute of Technology, Cambridge, Mass. Designed primarily to bombard and probe into the secrets of the nuclei of atoms, it will also be used for treatment of some deep cancers and research into cancer.

Insofar as treatments are concerned, the new Van de Graaff generator supplements two 2,000,000-volt generators which already have been used on about 300 cancer patients. It is too early, Dr. Hugh F. Hare, chief radiologist of the Lahey Clinic, said, to evaluate the results although 157 seem to be well after about 20 months.

Each generator shoots twice the amount of X-rays as would be produced by the world's entire supply of radium into the cancer tumors. A rotating chair holds the patient. The tumor is at the central point. The rest of the patient's body tissues receive only small amounts of radiation.

Within six months to a year, one of these 2,000,000-volt machines may be used to give a victim of leukemia, cancer of the blood, radiation over the entire body. The patient is himself a doctor. It first has to be discovered, through experiments with dogs, whether the healthy parts of the body can take this radiation. Also, the patient has not yet quite made up his mind to undergo the treatment.

Science News Letter, April 5, 1952

PSYCHOLOGY

Shock Reduces Tendency To See Things in New Way

► TREATMENT WITH electro-shock therapy reduces the tendency of a person to see things in a fresh way, members of the Eastern Psychological Association learned at a meeting in Atlantic City.

A group of patients at Payne Whitney Clinic, New York City, were asked to look at drawings used by psychologists to test perception. The figures are ambiguous; that is, they may appear one way or another and normal individuals looking at them will find that they suddenly shift from one appearance to another and back again. The rate of shift was measured for the patients and also for a group of normal students.

Then some of the patients were given electro-shock therapy. The reversal rate for treated patients dropped. For normal individuals, the rate increased with practice. For the patients who were not given shock, the rate remained the same.

The experiment was reported by Dr. V. R. Fisichelli, of Hunter College and F. V. Rockwell and Lenore Clarke of the Payne Whitney Clinic.

Science News Letter, April 5, 1952

ACOUSTICS

Our World Grows Noisier

Jet engines being tested, huge trucks rolling through city streets, steel works, street cars all add up to a noisy world that makes millions uncomfortable.

See Front Cover

By WADSWORTH LIKELY

► **JET ENGINES**, factory machinery, the roar of city traffic—the noise goes upward in a cacophonous crescendo—the theme song of our civilization.

It hurts our ears. It can deafen thousands.

It has reached the point where thousands of dollars are being spent each year on anti-hearing aids—on ways to make our civilization pipe down a little, at least to a bearable level.

The noisiest noise in our factories is the sound of a jet engine with afterburner being tested. The noisiest noise in the open air is that of traffic on a city street.

Some noises there is no escaping. This is true of the jet engines. One of the surest ways of testing these engines is to listen to them. Many defects first show up in the changes in sound and the motor can be stopped before it is damaged.

The intensity of the sound of a jet engine, 50 feet away from its tail assembly, has been measured at 134 decibels, the loudest industrial noise today. Inspectors and other workmen have to go closer to the engine than 50 feet.

The plane manufacturer has two problems. First, he has to protect the men who must work close to the jet engines from bodily damage. Second he must protect the other workmen in his factory and the people who live or work near his plant from the roar of the jet engines.

He has two channels of attack. First, he can try to reduce the sound at its source. For instance, mufflers are built into the test cells and the tails of the jet engines fit into the mufflers.

Then he can try to keep as much of the original sound as possible from getting far away from its source. He builds thick walls, which confine it, and he covers the inside of those walls with material which will absorb the noise.

The massive concrete structures shown on the cover of this week's SCIENCE News LETTER are test cell intakes for jet engines on test. Their design helps to reduce sound levels of engines being tested.

The jets are only the most recent and most fearsome examples of industrial noise. Factories which work with metals or electrical power transformers send out noises which cut down the efficiency of the men who have to work with them and annoy the neighbors.

The noise in our factories has been going steadily up as our civilization becomes more complex, and now the Korean crisis has sent it to a new high. Not too much is yet known about the physical effects of sound on the human body, but some sounds can cause permanent deafness in some people, if they are subjected to it long enough.

The noise of the water dripping out of the faucet, or a feather falling to earth, or a jet engine tuning up is basically the same thing. It is a pressure variation set up in air by a vibrating object. The air carries these pressure vibrations to the ear drum. The drum moves back and forth, very rapidly, in response to these pressure variations. We have learned to recognize the different speeds and intensities which various sounds set up and to interpret them in our brain.

We can best hear and understand the sound of the human voice when the intensity of the sound is between 40 and 90 decibels. When sound goes up to 120 decibels, we experience discomfort and an-

noyance. Above 140 the sensation becomes definitely painful.

Evidence about mechanical damage to the ear is scanty, but in two cases the ear was ruptured at about 160 decibels.

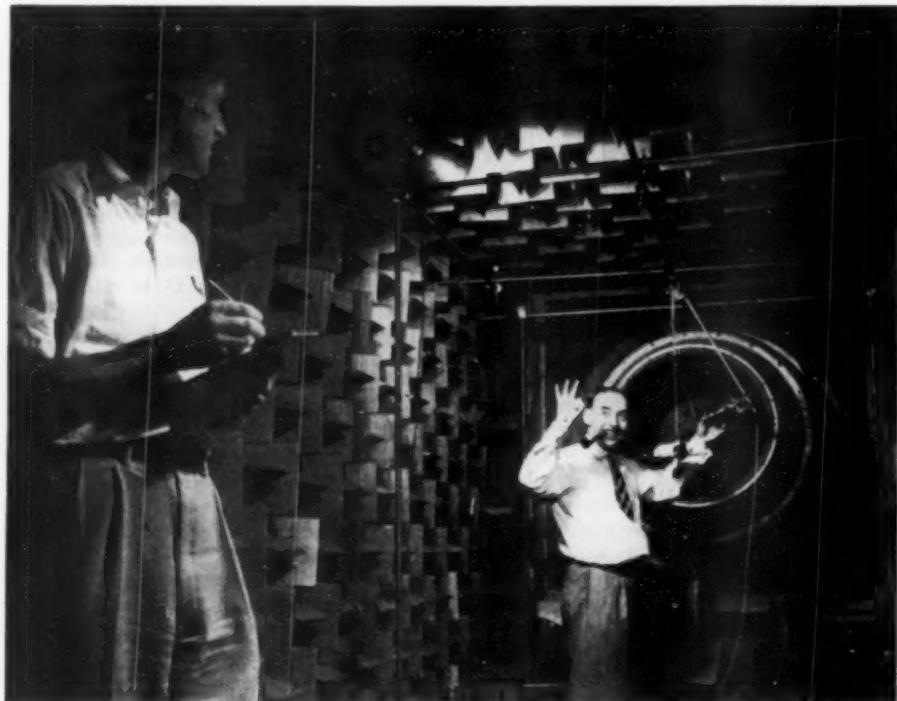
Sound can make you deaf without rupturing the ear. Here again the data are incomplete, but there is clinical evidence that permanent deafness does result when men are exposed daily to noise over a long period of time. Under those conditions, it is generally agreed, the maximum safe noise intensity is about 85 decibels—quite a bit under the intensity of a jet engine.

And relatively short exposures to intense sound can produce temporary deafness in a number of cases.

The problem of industrial noise has become serious enough so that scientists are working on methods of combating it. Physicians, psychologists, architects and physicists are all working on the problem, each from his own angle.

Reducing the transmission of sound is mainly obtained by providing sound barriers. With a non-porous wall, the weight of the wall is the determining factor and it has to be rather heavy and thick to provide adequate sound insulation.

However, the weight factor can be reduced by building the wall in several layers



SOUND-PROOF ROOM—Fiber-glass acoustical insulation is used in this room for testing the effects of noise on hearing. Siren produces sounds whose levels and intensities can be accurately measured.

that are attached to each other in as few places as possible. The fewer the attachments for supporting the inner layers, the less sound transmission there will be. With no connections, you can lose 45 decibels through the use of a one-half inch plasterboard double wall.

What about the noise inside these barriers? Sound absorption must be relied on. Already in almost every room the materials used for furnishing and the people themselves absorb some of the sound. Adding a sound-absorbing material to the ceiling may not reduce the number of decibels of sound much more.

However, a small reduction in decibels may seem like a much larger reduction in loudness to the ears of the people who have to work with the sound.

Acoustic materials can also be used for controlling the reverberations of sound in a room. This can be overdone, so that the room is said to sound "dead."

The National Bureau of Standards has been experimenting with what they call space-absorbers. These are geometrical forms such as spheres, cubes, cylinders and pyramids. They are hung from the ceiling at various points in space in the room.

It has been found that these are much more efficient than the same amount of material applied to a flat wall because that side of the material facing the wall is useless. They are useful where not enough sound absorption can be achieved on the wall surfaces.

A special adaptation of this principle is in jet engine test stands. Honeycomb structures made of sound absorbent walls or streamlined baffles placed in the exhaust stacks cut down the noise considerably.

Architects are now considering noise levels when they begin drawing their plans and deciding construction methods.

Science News Letter, April 5, 1952

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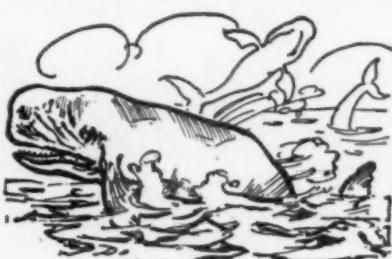
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*Prepared under the supervision of
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Write for leaflet RA-SNL*

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Whales

► WHEN WE get to talking about the biggest animals that ever lived, we are apt to forget that they are still living.

Dinosaurs are what our minds jump to or mammoths and mastodons; but the mammoths were pygmies compared with the dinosaurs that roamed the earth long before their time, and the dinosaurs would have to yield first place for size to the modern whales.

The humpback whale is credited with a length of 60 feet, the right whale with

70, a chalot with 80, while the blue whale has been known to reach a length of 85 feet.

Such size, of course, would be impossible to a land-dwelling animal. Whales can make it because they are supported on all sides by water, which is somewhat more dense than their bodies, and therefore takes up much of the burden that would have to be borne by bone and muscle and skin in land animals.

Whales are excellent examples of what adaptation to an environment can do to animals. They are mammals, warm-blooded animals that presumably once lived on land. But having taken to the water and lived there for many generations they have developed streamlined, fish-shaped bodies so perfectly that earlier generations naively classified them as fish.

Thus it came to pass that popular imagination saw the "sea monster" or "great fish" of the story of Jonah in a whale, and has been wrangling about the size of the whale's gullet ever since. And even the great Milton attributed to the whale a "scaly rind" as though it were a fish.

Whaling today is such a science that many of the heretofore unknown intimate details of the life histories of whales are being uncovered. But for the ordinary person who may not often get a chance to see a whale, even one stuffed in a museum, many restaurants throughout the country are now serving whale steak.

Science News Letter, April 5, 1952

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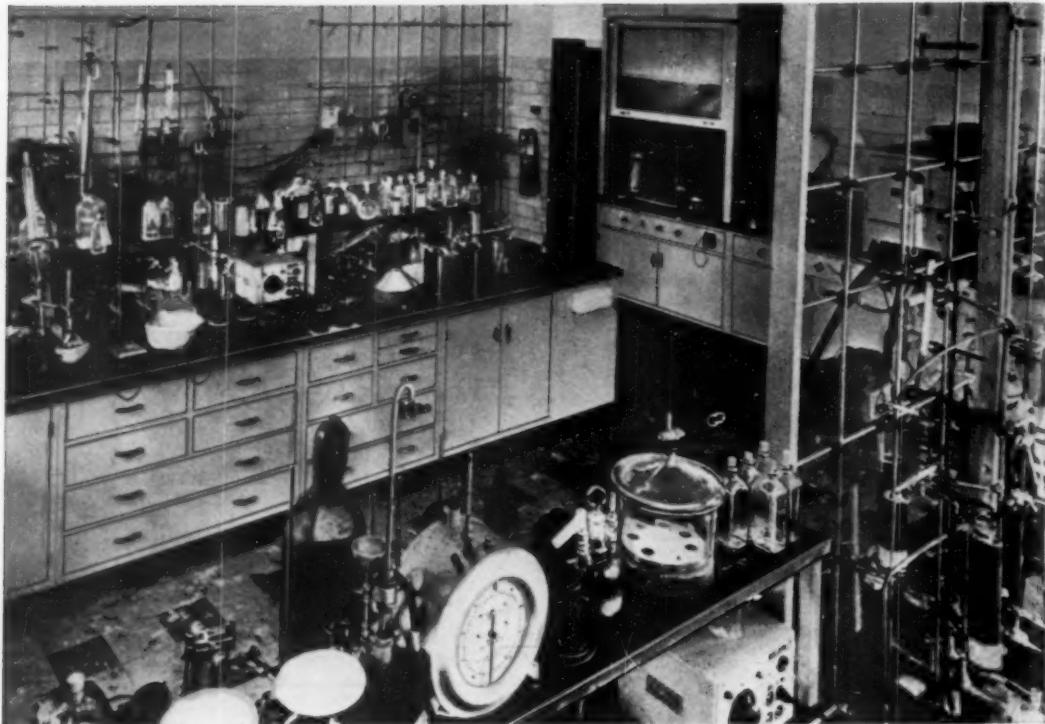
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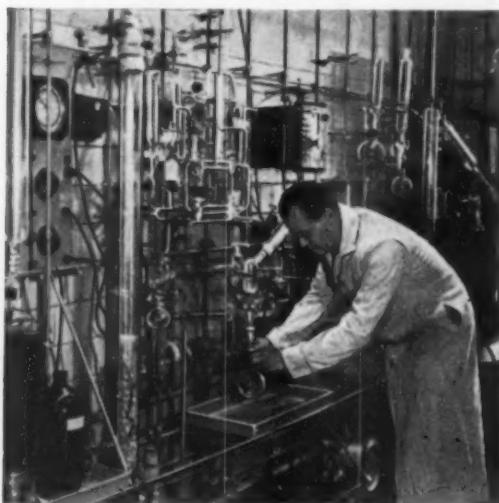
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These Great Laboratory

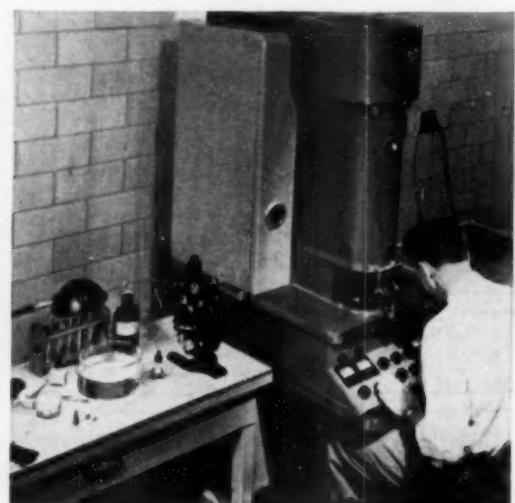


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Books of the Week

TO SERVE YOU: To get books, send us a check or money order to cover retail price. Address Book Dept., SCIENCE NEWS LETTER, 1719 N St., N. W., Washington 6, D. C. Ask for free publication direct from issuing organization.

ANNUAL REPORT OF THE FEDERAL SECURITY AGENCY—Office of Education—*Govt. Printing Office*, 42 p., paper, 20 cents. Describes the status of college students under Selective Service, Defense Training Programs, the National Scientific Register, and other concerns and activities of education for the year.

APPLIED RESEARCH IN THE UNITED STATES—Eugene W. Scott, Ed.—*National Academy of Sciences*, 90 p., paper, \$1.00. This report prepared for the Mutual Security Agency tells administrators of research in foreign countries how applied research is organized, administered and financed in the United States.

FOOD GUIDE FOR OLDER FOLKS—Rosalind C. Lifquist, Mary Walsh Cashin and Emily C. Davis—*Govt. Printing Office*, USDA Home and Garden Bulletin No. 17, 16 p., illus., paper, 5 cents. How to plan the adequate nutrition of people over 60.

FOREST ENTOMOLOGY—Samuel Alexander Graham—*McGraw-Hill*, 3d ed., 351 p., illus., \$6.00. It is now possible to predict whether or not a particular stand is likely to suffer from

insect pests and whether or not an individual tree will survive for a five-year period.

GAMBLING IN AMERICA—Herbert L. Marx, Jr., Ed.—*Wilson*, 222 p., \$1.75. Articles by many authors selected from magazines and newspapers. Intended to point out the desirability of a more consistent national or community policy as to what should be tolerated.

A GENERIC REVISION OF THE FAMILY AGROMYZIDAE (DIPTERA) WITH A CATALOGUE OF NEW WORLD SPECIES—Kenneth E. Frick—*University of California Press*, 452 p., illus., paper, \$1.25.

GEOLIC STRUCTURE AND OROGENIC HISTORY OF VENEZUELA: Text to Accompany the Author's Geologic Tectonic Map of Venezuela—Walter H. Bucher—*Geological Society of America*, 113 p., illus., \$1.50. This text and map were prepared as a result of a cooperative effort by petroleum companies, individual geologists, and the Servicio Técnico de Geología y Minería.

HEATING, VENTILATING, AIR CONDITIONING GUIDE 1952: An Instrument of Service Prepared for the Profession—*American Society of Heating and Ventilating Engineers*, 30th ed., 1496 p., illus., \$7.50. Contains a tech-

nical data section of reference material and a manufacturers' catalogue section with indexes.

HOW TO SOLVE GENERAL CHEMISTRY PROBLEMS—C. H. Sorum—*Prentice-Hall*, 157 p., paper, \$1.85. It has been the author's experience that students succeed better in learning how to work problems when they have them, together with explanations, in a separate book.

IES LIGHTING HANDBOOK: The Standard Lighting Guide—*Illuminating Engineering Society*, 2d ed., 987 p., \$8.00. A reference book with a wealth of information for engineers, decorators, architects and others.

MODERN GARDENING: A Complete Guide to the Agricultural Uses of Modern Chemistry's Miracle Drugs—P. P. Pirone—*Simon and Schuster*, 371 p., \$3.50. Practical information and advice for the home gardener. The second part contains answers to 500 questions.

NARCOTIC ADDICTION: A Bibliography—New York Academy of Medicine Library—*Welfare Council of New York City*, 39 p., paper, 50 cents. Prepared as an aid to investigation of this unhappy situation. Covers pertinent books published from early years to the present.

OPPORTUNITIES FOR THE BLIND AND VISUALLY IMPAIRED—Mary E. Switzer, Director—*Office of Vocational Rehabilitation*, 23 p., illus., paper, free upon request to publisher, Washington 25, D. C. This booklet shows that 18,000 blind workers are now employed. Here is information on what the visually impaired person can hope for. It will probably later be published in Braille and talking book editions.

PERFORMANCE OF A GAS-FIRED FORCED-AIR HEATING SYSTEM IN RESEARCH RESIDENCE NO. 1—Seichi Konzo and others—*University of Illinois*, 48 p., illus., paper, 60 cents. Shows the desirability of using low air-flow rates.

PROBLEMS IN PHYSICAL CHEMISTRY—Lars Gunnar Sillén, Paul W. Lange and Carl O. Gabrielson—*Prentice-Hall*, 370 p., \$7.35. To aid the student in becoming familiar with thermodynamic quantities by learning the relations between them and why they change with varying conditions.

PROGRESS IN ORGANIC CHEMISTRY: Volume 1—J. W. Cook, Ed.—*Academic Press*, 287 p., illus., \$7.80. Concise descriptions of recent developments in selected fields of the science. The eight chapters are contributed by nine authors.

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EUROPE On A Shoestring

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THE RADIO AMATEUR'S HANDBOOK—*American Radio Relay League*, 29th ed., 549 p., illus., paper, \$3.00. A reference book for all in the field from beginning experimenter to advanced amateur, from serviceman to physicist.

THE REPTILES OF OHIO—Roger Conant—*American Midland Naturalist*, 2d ed., 284 p., illus., \$3.50. Revised to bring this study up to date.

RESEARCH CORPORATION 1951 ANNUAL REPORT—*Research Corporation*, 63 p., paper, free upon request to publisher, 405 Lexington Ave., New York 17, N. Y. Reporting how \$875,000 in grants in aid was distributed.

SCHOOL HOUSING FOR PHYSICALLY HANDICAPPED CHILDREN—Romaine P. Mackie—*Govt. Printing Office*, Office of Education Bulletin 1951, No. 17, 26 p., illus., paper, 15 cents. Housing for crippled children should be designed to give them a feeling of security—plenty of handrails, ramps, good lighting—no swinging doors, slippery floors, sharp corners.

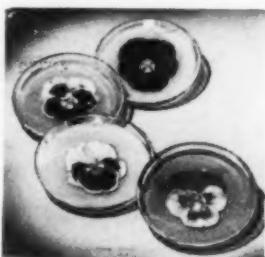
SOME APPLICATIONS OF ATOMIC ENERGY IN PLANT SCIENCE—Atomic Energy Commission—*Govt. Printing Office*, 211 p., illus., paper, 50 cents. Reports indicating the harmful effects of radiation on plant growth and also accounts of research with isotopes on plant physiology. This is the same as the eleventh semi-annual report of the U. S. Atomic Energy Commission.

STUDIES OF SLAB AND BEAM HIGHWAY BRIDGES: Part III, Small-Scale Tests of Shear Connectors and Composite T-Beams—Chester P. Siess, Ivan M. Viest, and Nathan M. Newmark—*University of Illinois*, 133 p., illus., paper, \$1.00.

THE WORLD BOOK ENCYCLOPEDIA 1952 ANNUAL SUPPLEMENT: Reviewing Important Events and Developments of 1951—J. Morris Jones, Mg. Ed., *Field Enterprises*, 182 p., illus., paper, \$1.25. Reviewing the events of 1952. Specialists in various fields contribute articles.

YOUR PROPERTY—PLAN ITS TRANSFER—J. H. Beuscher and Louise A. Young—*University of Wisconsin*, 16 p., illus., paper, 5 cents. Advice for farm owners on how to provide for disposition of the property in the event of death. Based on Wisconsin laws in effect on Sept. 1, 1951.

Science News Letter, April 5, 1952



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MEDICINE

Bombard Boron in Brain

► SHOOTING SLOW neutrons from an atomic pile into the head of a patient with cancer of the brain who has had a boron isotope administered to him has shown results that "are sufficiently encouraging so that we are pursuing it with all the energy at our command."

This was the statement of Dr. William Sweet, neurosurgeon at the Massachusetts General Hospital and assistant professor of surgery at Harvard Medical School, Boston, based on his work with 58 brain cancer patients.

Dr. Sweet found that boron 10, an isotope of boron that is not radioactive, will go to brain tumors in three times the amount that it goes to normal brain tissues when it is injected into the blood stream. The possibility then exists, he explained, that if the boron in the head is "shot" with a stream of slow neutrons from an atomic pile, the atoms of boron will "explode" or disintegrate, destroying the brain tumor but not harming the normal part of the brain.

In actual practice so far, Dr. Sweet said, all 58 patients were first operated on to remove most of the brain tumor. The atomic pile was used in an effort to clean up any fragments of the tumor remaining in the

brain. The hope is that boron 10 alone eventually can be used to get rid of the entire tumor.

Dr. Sweet's 58 patients were sent to the Brookhaven National Laboratories of the Atomic Energy Commission, Long Island, N. Y. Here their heads were actually exposed to the stream of slow neutrons from the pile. Dr. Sweet was reluctant to be specific about the results in the 58 cases. He said the pile belonged to Brookhaven and therefore it was the prerogative of scientists there to announce the findings.

Dr. Sweet said that so far "there was no statistically significant clinical evidence" that this treatment is useful. However, he said that the proportion of boron 10 which goes to the brain tumor is "useful."

Science News Letter, April 5, 1952

Type specimens are to biology what the standard inch, pound, etc. are to measurement; they are the first representatives of a species of animal or plant to be described, and all future specimens are compared to them in seeking determinations of species.

The viper is the only poisonous *reptile* found in Britain.

Where Do You Want To Go?

France? Brazil? West Indies? Hawaii? Mexico?

Read what Christian Science Monitor says about a new way to travel that sometimes costs 1/3 to 1/2 less.

By the travel editor of The Christian Science Monitor: Many fascinating travel booklets pass over this desk in the course of a year but the one that arrived the other day so interested this department that it cost the office several hours of work in order that we might absorb its content. The booklet is entitled, "Travel Routes Around the World" and is the traveler's directory to passenger-carrying freighters and liners. In no time at all you find yourself far out to sea cruising along under tropical skies without a care in the world. You find yourself docking at strange ports and taking land tours to those places you long have read about. Most interesting of the vast listings of ships are the freighters which carry a limited number of passengers in quarters comparable to the luxury afforded in the so-called big cruise ships which devote most of their space for passengers.

LARGE ROOMS WITH BEDS

It is important to realize that in most cases today, freighter passengers are considered first-class passengers, although the rates charged are generally on a par with either cabin or tourist class fare. Most passenger-carrying freighters, to quote the booklet, have their private bath and shower, and these cabins offer beds, not bunks. The rooms are generally larger than equivalent accommodations aboard passenger ships, and the cabin of a modern freighter is sometimes even twice as large as first-class cabins on some of the older passenger ships.

This booklet points out that it is frequently astonishing how low freighter fares are as compared with passenger ship fares: for example, less than one-half of the passenger ship fare to California is the amount asked on freighters. On most of the longer runs, the difference in favor of the freighters is regularly from a third to half of the passenger ship fare.

SERVICE AND MEALS RATED EXCELLENT

Foreign ships offer their own specialties, says the booklet. Thus vessels in the East Indian trade serve Rijksstafel (or King's Table), the East Indian dish which can run to as many as 80 different courses. Scandinavian ships serve smorgasbord every day, and some of their desserts (like strawberries smothered in a huge bowl of whipped cream) are never forgotten. Another feature of freighter travel is in its informality. No formal clothes are needed. Sports clothes are enough.

Other valuable information such as how to tip, shipboard activities, and costs are covered in the booklet, "Travel Routes Around the World."

Some of the trips listed include a trip to England for \$160, a 12-day Caribbean cruise for \$240, or a leisurely three-month Mediterranean voyage for \$500.

The booklet is published by Harian Publications, Greenlawn, New York, and may be obtained by sending to the publisher.

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